

## Office Memorandum • UNITED STATES GOVERNMENT

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TO :

DATE: 8 July 1959

FROM :

SUBJECT:

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1. At the request of DDP/DPD, the 1st through the 3rd of July 1959 was spent at the site of the tests of the  equipment. The airborne equipment had arrived about 28 June and was installed in the aircraft. Since this was the first time the entire airborne system had been assembled, considerable "debugging" had to be done. This was in progress on 1 July and was not yet completed on 3 July. The contractor believed that it was sufficiently near complete that the first test flight could be scheduled tentatively for 4 July.
2. Because of the work on the equipment, the opportunity to discuss the program in detail with the contractor was severely limited. However, a working knowledge of the airborne system was obtained, together with a tentative block diagram of the system.
3. The readout system was discussed but the contractor had not completed the assembly and testing of the readout equipment. The impression was gained that the contractor has been so busy with the airborne equipment that the readout system has received comparatively little attention, and at the moment is definitely in the embryonic stage. A block diagram of the contractor's current ideas was obtained, but it is not believed to be sufficiently firm for OSI readout equipment procurement. The contractor has estimated a total of 20 manweeks would be required to perform the readout of the project and when queried on this point, he could make no better estimate until some test flights had been made and experience gained on the readout process. This amounts to about 45 manhours per hour of actual taped data. It was agreed that the first tapes would probably take longer while later tapes would probably take less as experience is obtained. In the opinion of the observer, the time required for readout may be two to four times as long as the contractor's estimate.
4. The contractor plans to fly tests during the week of 5 July with the conclusion of these flights to occur about 10 July. These tests may be expected to establish the fact that the airborne

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equipment functions as a unit. However, it is doubtful that the contractor will be able to establish the accuracy to which power measurements can be recovered from the recorded data and thus prove the system in its **entirety** within that time schedule. It is understood that once flight tests have ceased, e.g. 10 July, there will be no opportunity to make further flight tests prior to deployment. It is understood that suitable operational weather overseas in the factor which is imposing a limitation on the time available to completely prove the system prior to its deployment.

5. It is believed that work still remains to be done in the following areas:

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- a. The [REDACTED] must be flight tested and proven adequate. The revised configuration of multiple antennas had not been flown by 3 July.
- b. The integrity of the airborne equipment must be established and the schedule of flight tests should accomplish this.
- c. Measurements must be made of the losses in the system which are used to modify the taped data, e.g. cable and connector losses, stability of these losses, calibration of attenuators, etc.
- d. The readout equipment must be designed, built and tested to insure that the taped data can be recovered.
- e. The technique and **procedure** for the processing of data including calculations to produce intelligence from the missions must be developed. This includes use of the photography to determine aircraft position.

6. Recommendations: It is recommended that:

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- b. The contractor provide complete information as soon as possible on the readout equipment and **procedures** required to obtain the desired intelligence information. It is expected

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that about 60 to 90 days will be required after this information is received to establish the capability in OSI to reduce the data on the tapes to form where it can be used in the computation phase of the readout process. Test tapes will also be required to insure the proper operation of the readout equipment and processes.

c. If the operational problems associated with suitable weather preclude time for a final and complete establishment of the capabilities of the whole system including readout and computation, consideration be given to completing this requirement by the return of the aircraft and equipment to the U.S. for tests under controlled conditions after the required missions have been concluded. This recommendation is considered to be undersirable and is viewed as a last-resort measure which might be dictated by circumstances in contradiction to sound program development from a technical standpoint.

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29 June 1959

MEMORANDUM FOR THE RECORD

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SUBJECT: [REDACTED] Photography

1. Requirement: To pinpoint location of C-123 aircraft over a given spot and at a given time within the Corridor in order to correlate data obtained simultaneously from electronics system.

2. Discussion:

a. The A-28 gyro-stabilized camera mount is capable of maintaining vertical reference within plus or minus 30°. At 10,000' altitude this would result in a component of 87' each for tip and tilt. So long as the mount maintains this tolerance (i. e., plus or minus 30°) point displacement should not exceed a total of 124'.

b. If greater accuracy is required, point determination would have to be computed by photogrammetric means. The degree of accuracy obtained by this method would depend upon the following factors:

(1) Existing geodetic control within the Corridor. Existing control is excellent and would present no problem.

(2) Basic photographic coverage which is also excellent.

(3) Weather conditions at time of flight. Cloud cover should not exceed 10 to 20% cloud cover for best results.

(4) Excess air turbulence, producing undue tip and tilt, will affect degree of location accuracy. Flight should, therefore, be conducted during periods of minimum turbulence.

(5) Film Processing. Improper processing and/or drying, which affects dimensional stability (stretch and/or shrinkage) of film will also affect accuracy of computing position of aircraft.

(6) Availability of large scale, i. e., 1 to 25,000 scale maps to orient mapping photography are available. These are fairly recent issue maps and are reputed to be of good quality.

3. Time-wise PIC advises that under existing procedures two to three hours per exposure will be required to measure and compute position of aircraft using niestri stereo comparator equipment. If the volume of photography warrants, HTA would establish a procedure based upon the use of the electronic computer to facilitate data computation.

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4. If accuracy less than 124' displacement is required, film should be processed by EK and position computations made by PIC. If accuracy of this order is not required, film could be processed in the Field and nadir determination and position location could also be computed locally.

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